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U.S. Cropland, Urbanization, and Landownership Patterns

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ABSTRACT

Most U.S. farmland is in no danger of being overrun by urban sprawl. Less than 20 percent of U.S. cropland is in metropolitan counties. Cropland in the Northeast is under more urban pressure than elsewhere because more than three-fourths of it is within or adjacent to urban counties. Ownership patterns of cropland are also different in metropolitan counties, with a higher proportion held in small parcels, by nonfarmers, and by nonfamily corporations than in rural areas. Such differences in ownership patterns may presage conversion of cropland to other uses.

Keywords: Cropland, potential cropland, urbanization, landownership.

CONTENTS

	Page
SUMMARY	v
INTRODUCTION	1
SOURCES OF DATA AND STUDY PROCEDURES	3
CROPLAND AND METROPOLITAN STATUS	5
CROPLAND AND POTENTIAL CROPLAND OWNERSHIP BY METROPOLITAN STATUS	6
Type of Owner	7
Occupation of Landowner	9
Age of Landowner	11
Residence of Landowner	11
Size of Holdings	13
Tenure of Landowner	13
CONCLUSIONS	13
REFERENCES	17

SUMMARY

Urbanization presents no threat to most U.S. farmland. More than 80 percent of U.S. cropland (and land that could be converted to cropland) lies in rural areas subject to little or no urban encroachment. Only in the Northeast is most of the cropland close to urban areas and therefore under greater pressure. The 1970's migration to nonmetro areas affected little farmland. More than 70 percent of the 1970-80 population growth was confined to 216 counties that contained only about 6 percent of total U.S. cropland.

Those findings are based on data from USDA's 1977 National Resource Inventory and 1978 Landownership Survey and the Department of Commerce's classification of SMSA counties (Standard Metropolitan Statistical Areas). This study provides data on landownership patterns by urban proximity for cropland and potential cropland. Differences in ownership patterns of cropland in urban and rural areas may indicate the relative likelihood of the land use to switch from farming.

Other findings of the study include:

- A little more than 10 percent of U.S. cropland lies in metro counties with an urban population of 250,000 or more.
- Most of the cropland and potential cropland in the United States is held by individuals (sole proprietors and husband-wife ownerships) who are farmers, over 55 years of age, and reside in the same county as the land they own. Most of these lands are held in units of 100-500 acres, by full- or part-owner operators.
- A higher proportion of cropland in urbanized counties than elsewhere is held by nonfamily corporations, by nonfarmers, by nonoperator owners, and in smaller units.
- The distribution of high- and medium-potential cropland is similar to that of cropland.

U.S. CROPLAND, URBANIZATION, AND LANDOWNERSHIP PATTERNS

Greg C. Gustafson and Nelson L. Bills*

INTRODUCTION

Most U.S. farmland is in no danger of being urbanized. Nevertheless, two factors within the last 15-20 years helped to foster an impression that urbanization is a serious threat. First, the population in rural areas rose in the 1970's, increasing the nonfarm demand for farmland (1).¹ Second, shortfalls in the supply of some food and fiber commodities in the 1970's rekindled historical concerns about resource scarcity and the Nation's capacity to meet future food and fiber demands. These developments brought Federal, State, and local policies for rural land use under close scrutiny and accentuated the need for additional evidence on cropland conversion and the vulnerability of our cropland supply to nonagricultural influences.

In 1981, evidence on farmland conversion trends became available in conjunction with the National Agricultural Lands Study (NALS). Based on comparisons of 1967 and 1977 land use information, the NALS estimated that up to 3 million acres of rural land are converted to nonagricultural uses each year—about 1 million acres of which are from the cropland base (12).

Several observers have argued that these data may significantly overstate the magnitude of farmland

losses (2, 6, 16). Recent data from the Soil Conservation Service indicate that between 1967 and 1982 urban and transportation uses increased at about 900,000 acres of rural land per year (8)—roughly a third of the rate cited in the National Agricultural Lands Study.

The annual rate of conversion, however, is but one indicator of the extent of urban pressure on the agricultural land base, and perhaps not an especially good one. Urbanization may affect far more farmland than will ever be converted to urban uses in the foreseeable future. For even the prospect of future conversion can undermine the longrun productivity of agricultural lands and cause greater idling of agricultural land than would otherwise be the case. Evidence of the presence of destabilizing nonagricultural influences would include: a high level of speculation in rural lands, overoptimistic expectations about the conversion of farmland to nonagricultural uses, increased absentee ownership, and shorter leases. Raup (15) also argues that the annual rate of conversion may be an inadequate measure of the influence of urbanization of farmland:

“The relevant measure (of urban competition for farmland) is the degree of compatibility between farm and nonfarm uses. The effect of most consequence for agriculture is seen on the limitations placed on the size and intensity of farm enterprises. We have a rapidly expanding area (the agri-urban zone) in which the types of agricultural activity

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¹ Italicized numbers in parentheses refer to sources listed in the References at the end of this report.

must conform to nonfarm concepts of appropriate land use. Dust from field cultivation, noise from tractors working at night, odors from livestock, use of toxic chemicals and fertilizers—these are all aspects of modern agriculture that generate resentment or fear in nonfarm rural residents. Above a relatively low density of rural residential land use, these fears become constraints on the farming mode. This restriction is of much greater potential importance than any loss of land in acre terms.” (15)

This report provides a more solid base of information for evaluating the influence of urbanization on food and fiber production. More specifically, our objectives are three: (1) to develop and present a rough measure of what Raup calls the “agri-urban zone,” (2) to determine the extent of the Nation’s base of cropland and potential cropland lying inside this zone, and (3) to examine whether the ownership of cropland and potential cropland inside this zone differs significantly from more remote cropland and potential cropland.

These relationships are important because the conversion of agricultural land to nonagricultural uses is typically preceded by changes in landownership in anticipation of future changes in land use. To some extent, differences in landowner characteristics between rural and urban areas can signal changing patterns of land use (3, 7). Thus, the extent to which landowner characteristics differ by level of urbanization may foretell how much U.S. cropland and potential cropland is likely to be affected by urbanization in the future—an insight that may help establish how far into the rural-to-urban continuum the agri-urban zone extends.

Before discussing the measures of urban influence, our data base, and interrelationships among land use, urban proximity, and landownership, we will briefly present some related data on the relationship of cropland to population growth in the recent past—the extent of the cropland base lying within fast-growth counties.

U.S. population growth in the 1970’s was concentrated in 216 fast-growth counties (counties with a 1970-80 population increase of 25,000 or more). Those

counties accounted for about 35 percent of the total U.S. population in 1980 and over 70 percent of the population growth from 1970-80 (table 1).

The high degree of geographic concentration in population growth results in a correspondingly high degree of concentration in the impact of rapid population growth on the cropland base. Fast-growth counties contain about 6 percent of the Nation’s cropland and about 8 percent of the high- and medium-potential cropland.²

These data indicate that population pressure on the U.S. agricultural land base is clearly not uniform. Probably less than 10 percent of the Nation’s cropland base was under intense pressure from population growth in the 1970’s. And the base of land with high or medium potential for conversion to cropland use appears to have been affected by population growth to about the same extent as cropland.

A brief caveat should be noted, however. The use of counties as the unit of observation has some limitations. The extent of the “blending of town and country” is not fully revealed because intra-county population migration is overlooked. In addition, population pressures are not uniformly distributed over all undeveloped land in a county. Recent studies suggest that the best agricultural land is under more pressure than marginal farmland (5, 17). On the other hand, in some rapidly growing counties, much of the agricultural land is still quite remote and removed from population pressures, particularly in many of the large counties in the West.

² The definition of land with high or medium potential for cropland is explained later in this report.

Table 1—Cropland and potential cropland in “fast-growth” counties

Item	Unit	U.S. total ¹	216 fast-growth counties ²	
Cropland	1,000 acres	412,914	26,057	(6.3)
High- and medium-potential cropland	1,000 acres	126,761	9,876	(7.8)
1980 population	1,000	226,100	80,333	(35.5)
1970-80 population growth	1,000	23,105	16,447	(71.2)

¹Excluding Alaska.

²Counties with a 1970-80 population increase of more than 25,000. Numbers in parentheses show percent of U.S. total.

Source: 1977 National Resource Inventory.

SOURCES OF DATA AND STUDY PROCEDURES

In this study, we associated cropland and potential cropland with landownership and a measure of urban influence (see box). Data on cropland, potential cropland, and landownership were obtained from a merger of the 1977 National Resource Inventory (NRI) conducted by the Soil Conservation Service (SCS) and the 1978 Landownership Survey (LOS) conducted by the Economic Research Service, U.S. Department of Agriculture. The NRI was a two-stage, area-point sample of U.S. land. Approximately 70,000 primary sampling units, generally 160 acres in size, were selected. SCS field staff collected land use information on three points within each sampling unit.

Cropland and Potential Cropland

Cropland was defined as land used in crop production in 1977, the year of the survey.

Potential cropland was rated as having high or medium potential for conversion to a crop use based on judgments of SCS technicians. Each NRI sample point not in crop use was rated for its potential—either high, medium, or low—for conversion to cropland. A sample point was classified as having high potential if the economic feasibility of conversion was favorable (based on 1976 price-cost relationships) and if similar land in the county had been converted to cropland within the last 3 years. Land with zero potential included desert, mountains, and land preempted for other uses. Low-potential land had one or more serious obstacles to development. Land having neither high potential for conversion nor serious obstacles to development was classified as having medium potential. For further information on potential cropland, see Lee (10) and Didericksen (4).

The 1977 NRI classified nearly 127 million acres as having high or medium potential for conversion to cropland. Of this total about 123 million acres (97 percent) was privately owned land. It is these lands that appear most likely to be converted to cropland and which, along with cropland, are further analyzed in this report.

Of the 127 million acres having high or medium potential for conversion to cropland, 36 million were found to have high potential and 91 million as having medium potential. Seventy-two percent of the high- and medium-potential cropland was classified as pasture and range. Another 25 percent was classified as forest, with the remaining 3 percent in other land uses (10).

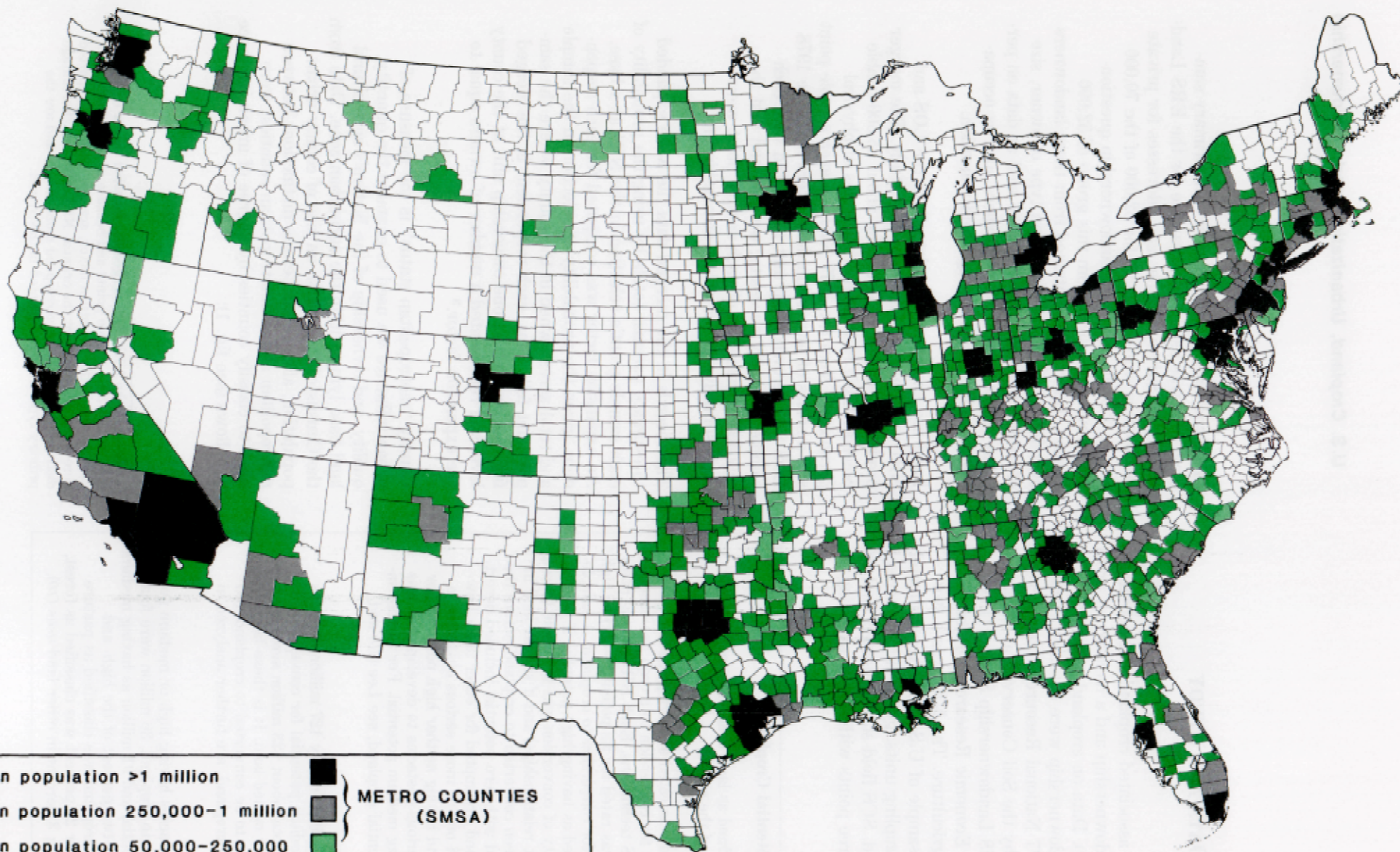
The owner of the first point in each primary sampling unit was used as the sample for the ERS Landownership Survey. Names and addresses for private landowners were available for 52,000 of the 70,000 points; 37,000 completed landownership questionnaires were obtained from this group of 52,000 owners. Information obtained from these landowners included general information on type of owner, size of holdings, and tenure status as well as data on personal characteristics of landowners such as occupation, income, residence, age, and education.






Land use and ownership data from the LOS and NRI were merged for use in this study. The merger produced a data file containing about 35,500 usable records. Each record shows a series of physical parameters from the 1977 NRI for each sample point and a series of ownership descriptors from the 1978 LOS for the ownership unit associated with each sample point. By necessity, we assumed that the physical parameters of each sample point were representative of the entire ownership unit.

The records in the merged data file were expanded to estimate national totals by using the probability of each sample point's selection in the NRI as a base. An expansion factor was computed for each respondent, given the probability of selection in the sample and total acres owned in the county where the sample point fell. Thus, each respondent in the merged file was counted as one ownership unit at the county level and represented a number of owners equal to the expansion factor.³

County "metropolitan status" is the measure of urban influence we used to examine the quantity, quality, and ownership of the Nation's agricultural land base lying within the agri-urban zone. Data from the Census of Population on size of county urban population, along with Census distinctions between metropolitan and nonmetropolitan counties, were used to classify counties by degree of urban influence as follows (see fig. 1):

³ Because the NRI-LOS merged file included only a fraction of the original NRI sample points and because of the consequent modification of the expansion factor, acreage estimates reported here differ slightly from the original NRI estimates. Percentage distributions, however, correspond more closely and are the primary type of data presented in this report.



Urban population >1 million		} METRO COUNTIES (SMSA)
Urban population 250,000-1 million		
Urban population 50,000-250,000		
Adjacent to SMSA and urban population of 2,500-50,000		} NONMETRO COUNTIES (nonSMSA)
Other rural counties		

U.S. Counties, by Metropolitan Status

- I - SMSA counties with a 1979 urban population of more than 1 million (186 counties)⁴
- II - SMSA counties with an urban population of 250,000-1 million (277 counties)
- III - SMSA counties with an urban population of 50,000-250,000 (213 counties)
- IV - NonSMSA counties adjacent to an SMSA county and having an urban population (residing in cities and towns, both incorporated and unincorporated) of 2,500-50,000 (787 counties)
- V - Other (1,648 counties).

These five categories, representing varying degrees of urban orientation, provide a more realistic representation of the diversity among counties than the traditional SMSA-nonSMSA distinction. This additional differentiation among counties was included because, for example, the differences in urban influence on farmland between SMSA counties with large and small urban populations may be as significant as the differences between SMSA and nonSMSA counties.

The distribution of counties among these five categories is not uniform (table 2). About 22 percent (676) of the 3,111 U.S. counties (excluding Alaska) were classified by the Census as SMSA counties (as

of 1979). These 676 counties were fairly evenly distributed among the three SMSA metropolitan status categories (categories I-III). Well over half of all U.S. counties fall in category V. Counties with an urban population of 250,000 or more (categories I and II) account for a relatively large percentage of all counties in only one region—the Northeast.

Comparing metropolitan status with population growth clearly demonstrates the emerging trend toward decentralization of the population. Nonmetropolitan counties registered a net population increase of more than 8 million between 1970 and 1980 (table 3), which amounts to 35 percent of the Nation's total population increase. These population gains reflect net migration from urban counties to rural counties, reversing conditions of rural emigration during the 1960's (1, 13). Almost 90 metropolitan counties realized a net population loss. Overall, the population in 1980 was slightly less concentrated than in 1970.

CROPLAND AND METROPOLITAN STATUS

What the recent demographic trends mean for U.S. agricultural land is not clear. We cannot be certain that the reoccupation of rural areas will persist because the factors affecting such decisions are not clearly understood. But the appearance of this trend in the 1970's places a premium on information showing any correspondence between population pressure and cropland. Over 80 percent of the 413 million

⁴ A Standard Metropolitan Statistical Area (SMSA) is a county or group of contiguous counties with at least one city of 50,000 people or more, or twin cities with a combined population of at least 50,000.

Table 2—Metropolitan status by region, United States

Metropolitan status	U.S. total	Northeast	North Central	South	West
<i>Number of counties</i>					
Metro:					
I	186 (6)	38 (18)	63 (6)	61 (4)	24 (6)
II	277 (9)	51 (23)	62 (6)	143 (10)	21 (5)
III	213 (7)	12 (6)	72 (7)	107 (8)	22 (5)
Nonmetro:					
IV	787 (25)	69 (32)	264 (25)	381 (27)	73 (18)
V	1,648 (53)	47 (21)	594 (56)	732 (51)	275 (66)
Total	3,111	217	1,055	1,424	415

Numbers in parentheses show percentage of total.
Source: U.S. Department of Commerce, 1979.

Table 3—U.S. population change by county metropolitan status, 1970-80

Metropolitan status	Total	Over 25,000 increase	10,000-25,000 increase	0-9,999 increase	Decrease
<i>Number of counties</i>					
Metro:					
I	186	74	40	29	43
II	277	66	78	103	30
III	213	42	53	103	15
Nonmetro:					
IV	787	24	88	606	69
V	1,648	10	60	1,175	403
Total	3,111	216	319	2,016	560
<i>Change in number of inhabitants</i>					
Metro:					
I	5,264,115	7,858,793	634,338	167,152	- 3,396,168
II	6,416,044	5,055,570	1,236,011	497,327	- 372,864
III	3,505,616	2,199,364	895,982	449,580	- 39,310
Nonmetro:					
IV	4,266,723	999,594	1,300,108	2,043,403	- 76,382
V	3,771,618	333,522	850,352	2,824,357	- 236,613
Total	23,224,116	16,446,843	4,916,791	5,981,819	- 4,121,337

Source: U.S. Department of Commerce, 1981.

acres of U.S. cropland is estimated to lie in nonmetro counties. Over 10 percent of U.S. cropland is located in metro counties with an urban population of 250,000 or more—nearly 4 percent in category I counties and 7 percent in category II counties (table 4).

Eighty-one percent of U.S. cropland is located in the South and North Central regions. The most urbanized counties (categories I and II) account for a significant proportion of cropland in only one region, the Northeast. Cropland in this region is under a greater amount of urban pressure than in any other—about 40 percent of the region's 14 million acres of cropland is located in counties with an urban population of 250,000 or more (table 4). In each of the other three regions, over 80 percent of the cropland base is located in nonmetro counties (categories IV and V).

The distribution of high- and medium-potential cropland in the United States is very similar to that of cropland. Eighty-one percent of the 127 million acres with high or medium potential for conversion to cropland is located in the South and North Central

regions (table 5). Eighty-two percent of high- and medium-potential cropland is in nonmetro counties. Counties with an urban population of 250,000 or more account for 11 percent of the potential cropland in the United States. The limited amount of potential cropland in the Northeast is under more urban pressure than potential cropland in any other region—about one-third of the land with potential for conversion in the Northeast is located in the most urbanized counties (over 250,000 urban residents).

CROPLAND AND POTENTIAL CROPLAND OWNERSHIP BY METROPOLITAN STATUS

Cross-classifications of landownership characteristics by metropolitan status categories for cropland provide information not previously available on how ownership of the Nation's cropland interacts with (or is affected by) urbanization. Six ownership characteristics were selected: type of owner, occupation, age, residence, size of holdings, and tenure of the landowner. Analysis of the relationships between landowner characteristics and proximity to urbanized

areas can provide an indicator of the extent of urban influences on agricultural land, the size of the agri-urban zone, and the magnitude of farmland conversion we can expect in the future.

In the following pages, differences in ownership patterns by metropolitan status for the six ownership characteristics are presented for cropland and potential cropland in the United States.

Type of Owner

Individuals (sole proprietors and husband-wife ownerships) control about three-fourths of all cropland in the United States (table 6) and about 71 percent of the cropland in the most urbanized counties. Most of the difference is accounted for by the higher proportion of cropland owned by nonfamily corporations in larger metro counties—nonfamily corporations own 5.8 percent of the cropland in categories I and II counties and 2.5 percent in categories III, IV, and V counties. This result is generally consistent with what most observers would hypothesize: As the

degree of urban influence increases, thus increasing the likelihood of conversion of cropland to a nonfarm use, one would expect a greater proportion of agricultural land to be owned by entities with shorter planning horizons and more motivation to own cropland for speculative purposes than for income from agricultural production.

As with cropland, there is little variation among metro status categories in the proportion of potential cropland owned by different types of owners (table 7). Most of the potential cropland is owned by individuals—75 percent is owned by sole proprietors and husband-wife ownerships. This pattern is relatively uniform among metro status categories. Some minor variations do exist, however. In category III counties, a relatively high proportion is owned by sole proprietors and a relatively low proportion is owned by husband-wife ownerships. As with cropland, the proportion of potential cropland owned by nonfamily corporations is somewhat greater in metro than in nonmetro counties.

Table 4—Cropland: Region and metropolitan status

Metropolitan status	U.S. total	Northeast	South	North Central	West
<i>1,000 acres</i>					
Metro:					
I	15,096	1,399	3,187	8,313	2,197
II	28,872	4,230	8,318	11,313	5,011
III	31,080	688	7,792	17,425	5,175
Nonmetro:					
IV	109,943	6,214	32,692	58,428	12,609
V	227,923	2,166	51,902	133,158	40,697
Total	412,914	14,697	103,891	228,637	65,689
<i>Percent of cropland</i>					
Metro:					
I	3.7	9.5	3.1	3.6	3.3
II	7.0	28.8	8.0	5.0	7.6
III	7.5	4.7	7.5	7.6	7.9
Nonmetro:					
IV	26.6	42.3	31.5	25.6	19.2
V	55.2	14.7	49.9	58.2	62.0
Total	100.0	100.0	100.0	100.0	100.0

Source: U.S. Department of Commerce, 1981, and 1977 National Resource Inventory.

Table 5—Potential cropland: Region and metropolitan status

Metropolitan status	U.S. total	Northeast	South	North Central	West
<i>1,000 acres</i>					
Metro:					
I	4,166	599	1,787	1,157	623
II	9,328	972	5,269	1,948	1,139
III	9,276	283	5,663	2,318	1,012
Nonmetro:					
IV	34,611	1,858	20,074	9,295	3,384
V	69,380	938	28,389	26,269	13,784
Total	126,761	4,650	61,182	40,987	19,942
<i>Percent of potential cropland</i>					
Metro:					
I	3.3	12.9	2.9	2.8	3.1
II	7.4	20.9	8.6	4.7	5.7
III	7.3	6.1	9.3	5.7	5.1
Nonmetro:					
IV	27.3	40.0	32.8	22.7	17.0
V	54.7	20.1	46.4	64.1	69.1
Total	100.0	100.0	100.0	100.0	100.0

Source: U.S. Department of Commerce, 1981, and 1977 National Resource Inventory.

Table 6—Cropland: Ownership and metropolitan status, United States¹

Type of ownership	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Sole proprietor	164,487	6,173	9,222	12,361	44,414	92,318
Husband-wife	165,052	5,468	12,408	11,475	46,931	88,771
Nonfamily partnership	45,567	1,985	3,142	4,190	11,674	24,576
Other partnership	6,036	348	734	289	1,698	2,967
Family corporation	18,078	677	1,484	1,290	4,813	9,814
Nonfamily corporation	12,052	734	1,981	1,028	2,923	5,386
Miscellaneous	13,244	793	1,582	1,332	4,055	5,483
Total ²	424,516	16,177	30,552	31,965	116,507	229,315
Percent of cropland						
Sole proprietor	38.8	38.2	30.2	38.7	38.1	40.3
Husband-wife	38.9	33.8	40.6	35.9	40.3	38.7
Nonfamily partnership	10.7	12.3	10.3	13.1	10.0	10.7
Other partnership	1.4	2.2	2.4	.9	1.5	1.3
Family corporation	4.3	4.2	4.9	4.0	4.1	4.3
Nonfamily corporation	2.8	4.5	6.5	3.2	2.5	2.4
Miscellaneous	3.1	4.9	5.2	4.2	3.5	2.4
Total ²	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.

² Totals may not add due to rounding.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

Table 7—Potential cropland: Ownership and metropolitan status, United States¹

Type of ownership	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Sole proprietor	48,796	1,806	3,576	3,746	13,360	26,308
Husband-wife	45,899	1,703	3,334	2,291	13,717	24,854
Nonfamily partnership	13,403	253	1,129	964	3,957	7,100
Other partnership	2,267	309	104	61	703	1,089
Family corporation	6,287	138	170	383	1,146	4,450
Nonfamily corporation	4,989	155	524	523	1,349	2,438
Miscellaneous	3,823	89	307	266	1,241	1,920
Total ²	125,464	4,452	9,145	8,235	35,473	68,159
Percent of potential cropland						
Sole proprietor	38.9	40.6	39.1	45.5	37.7	38.6
Husband-wife	36.6	38.3	36.5	27.8	38.7	36.5
Nonfamily partnership	10.7	5.7	12.4	11.7	11.2	10.4
Other partnership	1.8	6.9	1.1	.7	2.0	1.6
Family corporation	5.0	3.1	1.9	4.7	3.2	6.5
Nonfamily corporation	4.0	3.5	5.7	6.4	3.8	3.6
Miscellaneous	3.1	2.0	3.4	3.2	3.5	2.8
Total ²	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.

² Totals may not add due to rounding.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

Occupation of Landowner

Variations in cropland ownership according to the occupation of the owner is also consistent with what most observers would predict. Farmers own over half of all U.S. cropland (table 8). The proportion of cropland owned by farmers increases as the urban influence declines. For example, farmers own 39 percent of the cropland in category I counties and 57 percent of the cropland in category V counties. On the other hand, exactly the opposite relationship prevails for cropland owned by white-collar and blue-collar workers. They own 34 percent of the cropland

in category I counties and 14 percent in category V counties.

The proportion of potential cropland owned by farmers is somewhat less than for cropland (table 9). The same relationships exist between the proportion of potential cropland owned by various occupation categories of owners and degree of urbanization. Nearly half (45 percent) of the potential cropland in category I counties is owned by white-collar and blue-collar workers and declines as the degree of urban influence decreases, reaching a low of 22 percent

Table 8—Cropland: Owner's occupation and metropolitan status, United States¹

Owner's occupation	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Farming ²	204,718	5,524	11,640	12,980	52,305	122,269
Retired	74,047	2,307	5,626	6,409	21,404	38,301
White collar	43,505	2,910	3,440	4,008	13,030	20,116
Blue collar ³	24,078	1,896	3,332	1,558	7,276	10,017
Other	17,115	443	959	1,594	4,422	9,697
No response ⁴	29,330	1,225	1,511	2,496	8,788	15,311
Subtotal ⁵	392,792	14,305	26,506	29,046	107,225	215,710
Corporations and large partnerships	31,724	1,872	4,046	2,919	9,282	13,605
Total	424,516	16,177	30,552	31,965	116,507	229,315
Percent of cropland ⁶						
Farming ²	52.1	38.6	43.9	44.7	48.8	56.7
Retired	18.9	16.1	21.2	22.1	20.0	17.8
White collar	11.1	20.4	13.0	13.8	12.2	9.3
Blue collar ³	6.1	13.3	12.6	5.4	6.8	4.6
Other	4.4	3.1	3.6	5.5	4.1	4.5
No response ⁴	7.5	8.6	5.7	8.6	8.2	7.1
Total ⁵	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.

² Including farm managers and farm laborers.

³ Including private household and service workers.

⁴ Because all respondents did not answer all questions on the questionnaire, a "no response" category is shown in tables 8-13, 16, and 17. In some cases, the "no response" rate is small, indicating that the percentage distributions for ownership units or acres would not vary substantially even if 100 percent had responded. In other cases, however, the "no response" rate is high—an indication that the responses to the question on which the table is based should be interpreted with care. Had all respondents answered the question, the estimates of ownership units or acres for the other categories in the table would be higher than shown. As an aid in interpreting tabular data, the reader may want to recalculate the percentage distribution based only on the number of observations for which a positive response was obtained. If this is done, however, interpretations of responses should be accompanied by the proviso that they are based only on the positive responses.

⁵ Totals may not add due to rounding.

⁶ Excluding cropland or potential cropland owned by corporations and large partnerships.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

Table 9—Potential cropland: Owner's occupation and metropolitan status, United States¹

Owner's occupation	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Farming ²	50,855	830	2,881	2,749	13,292	31,104
Retired	20,118	568	1,909	1,270	5,972	10,399
White collar	15,879	1,134	1,252	1,212	4,808	7,474
Blue collar ³	11,8178	698	1,125	693	3,288	6,013
Other	5,385	481	467	457	1,438	2,542
No response ⁴	9,919	370	688	953	3,194	4,714
Subtotal ⁵	113,972	4,079	8,322	7,333	31,993	62,245
Corporations and large partnerships	11,492	373	823	902	3,480	5,914
Total	125,464	4,452	9,145	8,235	35,473	68,159
Percent of potential cropland ⁶						
Farming ²	44.6	20.3	34.6	37.5	41.6	50.0
Retired	17.7	13.9	22.9	17.3	18.7	16.7
White collar	13.9	27.8	15.0	16.5	15.0	12.0
Blue collar ³	10.4	17.1	13.5	9.5	10.3	9.7
Other	4.7	11.8	5.6	6.2	4.5	4.1
No response ⁴	8.7	9.1	8.3	13.0	10.0	7.6
Total ⁵	100.0	100.0	100.0	100.0	100.0	100.0

See footnotes to table 8.

Table 10—Cropland: Age of owner and metropolitan status, United States¹

Owner's age (years) ²	Total	Metropolitan status				
		I	II	III	IV	V
<i>1,000 acres</i>						
Under 25	1,791	18	38	193	555	987
25-34	21,476	488	983	1,803	6,050	12,152
35-44	51,625	1,672	2,931	3,027	15,320	28,675
45-54	84,849	3,333	6,256	6,224	21,796	47,240
55-64	93,000	3,871	7,464	6,630	24,061	50,974
65-74	67,444	2,069	4,361	5,095	18,918	37,001
75 and over	41,918	1,581	2,791	3,593	12,093	21,860
No response ³	30,689	1,273	1,682	2,480	8,432	16,822
Subtotal ⁴	392,792	14,305	26,506	29,046	107,225	215,710
Corporations and large partnerships	31,724	1,872	4,046	2,919	9,282	13,605
Total	424,516	16,177	30,552	31,965	116,507	229,315
<i>Percent of cropland⁵</i>						
Under 25	0.5	0.1	0.1	0.7	0.5	0.5
25-34	5.5	3.4	3.7	6.2	5.6	5.6
35-44	13.1	11.7	11.1	10.4	14.3	13.3
45-54	21.6	23.3	23.6	21.4	20.3	21.9
55-64	23.7	27.1	28.2	22.8	22.4	23.6
65-74	17.2	14.5	16.5	17.5	17.6	17.2
75 and over	10.7	11.1	10.5	12.4	11.3	10.1
No response ³	7.8	8.9	6.4	8.5	7.9	7.8
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.

² Sole owner or principal partner.

³ See table 8, footnote 4.

⁴ Totals may not add due to rounding.

⁵ Excluding cropland (or potential cropland) owned by corporations and large partnerships.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

in category V counties. As with cropland, farmers own a greater proportion of the potential cropland in counties less influenced by urbanization—the proportion of potential cropland owned by farmers ranges from a low of 20 percent in category I counties to a high of 50 percent in category V counties.

Age of Landowner

Over half of all U.S. cropland is held by owners over 55 years of age (table 10). The proportion of cropland held by owners in this age group varies very little among the different metro status categories of counties. Landowners over 55 own a slightly larger proportion of the cropland in metro (categories I-III) counties, but the difference does not appear to be significant. The proportion of cropland held by landowners under age 35 is lower in metro counties, but, once again, the difference is quite small. Overall, the distribution of cropland acreage owned by each age

group is about the same for each metropolitan status category.

Owners over 55 years of age hold 53 percent of the potential cropland in the United States (table 11). Once again, the proportion of potential cropland held by owners over 55 is higher in metro counties, but the difference is too small to be significant. There is also a slightly smaller proportion of potential cropland owned by landowners under age 35 in larger metro counties. As with cropland, there is very little variation by metro status category in the distribution of potential cropland owned by age group.

Residence of Landowner

About three-fourths of U.S. cropland and potential cropland is held by owners who live in the same county as the land they own (tables 12 and 13).

Table 11—Potential cropland: Age of owner and metropolitan status, United States¹

Owner's age (years) ²	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Under 25	418	0	0	0	104	314
25-34	5,371	31	279	301	1,393	3,368
35-44	13,294	450	1,158	659	3,770	7,257
45-54	25,397	1,194	1,951	1,750	6,889	13,612
55-64	28,027	1,087	1,696	1,495	7,944	15,805
65-74	20,341	715	1,216	1,490	5,229	11,691
75 and over	11,896	337	1,166	590	3,998	5,806
No response ³	9,228	266	857	1,047	2,666	4,392
Subtotal ⁴	113,972	4,079	8,322	7,333	31,993	62,245
Corporations and large partnerships	11,492	373	823	902	3,480	5,914
Total	125,464	4,452	9,145	8,235	35,473	68,159
Percent of potential cropland ⁵						
Under 25	0.4	0	0	0	0.3	0.5
25-34	4.7	.8	3.4	4.1	4.4	5.4
35-44	11.7	11.0	13.9	9.0	11.8	11.7
45-54	22.3	29.3	23.4	23.9	21.5	21.9
55-64	24.6	26.6	20.4	20.4	24.8	25.4
65-74	17.9	17.5	14.6	20.3	16.3	18.8
75 and over	10.4	8.3	14.0	8.1	12.5	9.3
No response ³	8.1	6.5	10.3	14.3	8.3	7.1
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

See table 10 for footnotes.

Table 12—Cropland: Residence of owner and metropolitan status, United States¹

Place of residence ²	Total	Metropolitan status				
		I	II	III	IV	V
<i>1,000 acres</i>						
Same county	329,623	12,420	24,256	26,288	91,153	175,506
Other county, same State	56,572	2,841	4,838	3,304	16,261	29,328
Other State	25,693	355	1,014	1,652	5,627	17,044
No response ³	12,628	561	445	720	3,465	7,437
Total ⁴	424,516	16,177	30,552	31,965	116,507	229,315
<i>Percent of cropland</i>						
Same county	77.7	76.8	79.4	82.2	78.2	76.5
Other county, same State	13.3	17.6	15.8	10.3	14.0	12.8
Other State	6.1	2.2	3.3	5.2	4.8	7.4
No response ³	3.0	3.5	1.5	2.3	3.0	3.2
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.² Relative to land reported.³ See table 8, footnote 4.⁴ Totals may not add due to rounding.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

Table 13—Potential cropland: Residence of owner and metropolitan status, United States¹

Place of residence ²	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Same county	94,889	3,385	7,189	6,107	27,042	51,166
Other county, same State	17,607	721	1,025	1,008	4,836	10,018
Other State	7,712	281	537	529	2,290	4,076
No response ³	5,257	65	395	592	1,306	2,899
Total ⁴	125,464	4,452	9,145	8,235	35,473	68,159
Percent of potential cropland						
Same county	75.6	76.0	78.6	74.2	76.2	75.1
Other county, same State	14.0	16.2	11.2	12.2	13.6	14.7
Other State	6.2	6.2	5.9	6.4	6.5	6.0
No response ³	4.2	1.5	4.3	7.2	3.7	4.3
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

See table 12 for footnotes.

There is very little variation by metropolitan status category in the proportion of cropland or potential cropland owned by landowners who reside in the same county in which their land is located. However, there is a moderate amount of variation in the proportion of cropland held by out-of-county owners. A somewhat larger proportion of the cropland in the two most urban categories is held by owners who live out of the county but in the same State as their land. And a smaller proportion of the cropland in these two most urban categories is held by out-of-state owners.

A word of caution: On the basis of data presented here, one might be tempted to reject the widely held hypothesis that absentee ownership of cropland increases with urban proximity. Data from this survey, however, underestimate absentee landholding since data were not collected on the holdings of absentee landowners who live in the same county as the land they own.

Size of Holdings

More of the land in metro counties is held in small units than is the case in nonmetro counties (table 14). In fact, the proportion of cropland held in units of less than 100 acres increases with urbanization—from 9 percent of the cropland in category V counties to 32 percent in category I counties. The opposite relationship prevails for large ownership units. Nearly half (47 percent) of the cropland in category V counties is held in units of 500 acres or more, while about 18 percent of the cropland in category I counties is held in units of 500 acres or more. This evidence strongly supports the hypothesis that a negative relationship exists between urban proximity and size of holdings.

Relative to cropland a greater proportion of potential cropland is held in small units: 13 percent of cropland and 21 percent of potential cropland is held in units smaller than 100 acres (table 15). About 10 percent of all potential cropland is held in units smaller than 50 acres. As with cropland, the size of holdings of potential cropland declines as urbanization increases. Forty-seven percent of the potential cropland in the most highly urbanized counties (category I) is held in ownership units of less than 100 acres. This percentage declines to 16 percent in category V counties. As

with cropland, the amount of potential cropland held in large units is greater in nonmetro counties. In category I counties, 14 percent is held in units of 500 acres and larger; this increases to 47 percent in category V counties.

Tenure of Landowner

Most U.S. cropland is controlled by owners in three tenure categories: full-owner operators (25 percent), part-owner operators (23 percent), and nonoperator landlords (31 percent, see table 16). Of the cropland held under these three types of tenure arrangements, only cropland held by part-owner operators exhibits a strong relationship to urbanization. A higher proportion of cropland is held by part-owner operators in the least urbanized counties. Part-owner operators control 18 percent of the cropland in the most urban (category I) counties and 26 percent in the most rural counties. The tenure category exhibiting the clearest relationship to urbanization is nonoperator owners. Consistent with conventional wisdom, the proportion of land owned by this group declines with reductions in the level of urbanization—ranging from a high of 9 percent of the cropland in the most urban counties to a low of 3 percent of the cropland in the least urban counties.

The same three tenure groups control most of the potential cropland: full-owner operators own 29 percent, part-owner operators own 19 percent, and nonoperator landlords own 19 percent (table 17). Nonoperator owners control a much larger proportion of potential cropland than cropland—12 percent versus 4 percent. As with cropland, part-owner operators and nonoperator owners are the only tenure categories that vary significantly with urbanization. The proportion of potential cropland owned by nonoperator owners increases with increases in urbanization, while the opposite relationship exists for part-owner operators:

CONCLUSIONS

Next to commodity price/production cost relationships, urbanization may be the most important determinant of cropland supply. The rate of conversion of U.S. cropland to urban and transportation uses in the 1970's was modest—probably less than one-tenth of 1 percent per year. However, the actual physical con-

Table 14—Cropland: Size of holding and metropolitan status, United States¹

Size of holding (acres)	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Less than 50	24,369	2,635	3,771	1,886	7,526	8,551
50-99	32,642	2,534	4,142	3,395	11,005	11,566
100-499	205,656	8,021	14,565	16,761	65,462	100,847
500-4,999	142,325	2,576	6,795	8,860	28,477	95,617
5,000 and more	19,524	411	1,279	1,064	4,037	12,734
Total ²	424,516	16,177	30,552	31,965	116,507	229,315
Percent of cropland						
Less than 50	5.7	16.3	12.3	5.9	6.5	3.7
50-99	7.7	15.7	13.6	10.6	9.5	5.0
100-499	48.4	49.6	47.7	52.4	56.2	44.0
500-4,999	33.5	15.9	22.2	27.7	24.4	41.7
5,000 and more	4.6	2.5	4.2	3.3	3.5	5.6
Total ²	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.² Totals may not add due to rounding.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

Table 15—Potential cropland: Size of holding and metropolitan status, United States¹

Size of holding (acres)	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Less than 50	11,915	1,335	1,516	1,167	3,820	4,077
50-99	14,544	757	1,697	1,082	4,460	6,549
100-499	49,380	1,742	3,739	2,796	15,415	25,689
500-4,999	36,455	476	1,897	1,854	8,079	24,148
5,000 and more	13,171	142	297	1,337	3,700	7,695
Total ²	125,464	4,452	9,145	8,235	35,473	68,159
Percent of potential cropland						
Less than 50	9.5	30.0	16.6	14.2	10.8	6.0
50-99	11.6	17.0	18.6	13.1	12.6	9.6
100-499	39.4	39.1	40.9	34.0	43.5	37.7
500-4,999	29.1	10.7	20.7	22.5	22.8	35.4
5,000 and more	10.5	3.2	3.3	16.2	10.4	11.3
Total ²	100.0	100.0	100.0	100.0	100.0	100.0

See table 14 for footnotes.

version of cropland to urban and related uses fails to realize the full impact of urbanization on food and fiber production. The influence of urbanization on land use may extend far beyond the acreage actually converted. The prospect of future conversion can affect landowner expectations and investment behavior, causing premature idling of farmland.

The full effect of urbanization on cropland supply cannot be precisely estimated. This report is an effort to explore the upper limit of the amount of the Nation's cropland and potential cropland affected by

urbanization. The evidence presented in this report suggests:

- The influence of rapid population growth and urbanization is concentrated. Probably not more than 10 percent of all U.S. cropland and potential cropland is affected by urbanization. About 6 percent of the Nation's agricultural land is in fast-growth counties. Over 80 percent of U.S. cropland is located in nonmetro counties. Of the cropland and potential cropland in metro counties, about

Table 16—Cropland: Tenure of owner and metropolitan status, United States¹

Tenure ²	Total	Metropolitan status				
		I	II	III	IV	V
1,000 acres						
Full-owner operator	104,292	3,845	8,055	7,033	29,120	56,239
Full-owner operator landlord	27,294	1,315	2,576	2,263	7,856	13,284
Part-owner operator	99,310	2,936	5,496	7,130	24,446	59,302
Part-owner operator landlord	10,161	209	891	583	2,111	6,366
Tenant owner operator	2,778	111	251	196	719	1,500
Nonoperator landlord	132,097	5,419	9,555	10,685	37,495	68,942
Nonoperator owner	15,695	1,490	2,022	1,078	4,191	6,914
No response ³	32,889	850	1,706	2,997	10,569	16,768
Total ⁴	424,516	16,177	30,552	31,965	116,507	229,315
Percent of cropland						
Full-owner operator	24.6	23.8	26.4	22.0	25.0	24.5
Full-owner operator landlord	6.4	8.1	8.4	7.1	6.7	5.8
Part-owner operator	23.4	18.2	18.0	22.3	21.0	25.9
Part-owner operator landlord	2.4	1.3	2.9	1.8	1.8	2.8
Tenant owner operator	.7	.7	.8	.6	.6	.7
Nonoperator landlord	31.1	33.5	31.3	33.4	32.2	30.1
Nonoperator owner	3.7	9.2	6.6	3.4	3.6	3.0
No response ³	7.8	5.3	5.6	9.4	9.1	7.3
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

¹ Revised, excluding Alaska.

² The seven tenure categories, as developed by Lewis (11), are defined as follows: *Full-owner operator* — those who operate land that they own; they do not rent land to or from others. *Full-owner operator landlords* — those who operate only land that they own, yet they rent land to and from others. *Part-owner operators* — those who operate land that they own and additional land that they rent. *Part-owner operator landlords* — those who operate land they rent and own, but they may also rent land to and from others. *Tenant owner operators* — those who operate only land that they rent from others, but also own land which they may rent to others. *Nonoperator landlords* — those who do not operate any land but rent land to others. *Nonoperator owners* — those who do not operate any land and do not rent land to others.

³ See table 8, footnote 4.

⁴ Totals may not add due to rounding.

Source: 1977 National Resource Inventory and 1978 Landownership Survey.

half is located in the least urbanized metro counties.

- There are observable differences in landowner characteristics by level of urbanization. A higher proportion of the cropland and potential cropland in urbanized counties is held by nonfamily corporations, by owners with nonoperator owners, and is held in small ownership units. Such differences indicate that the continued agricultural use of cropland (or likelihood of conversion to cropland) in

highly urbanized counties is not assured, but the data cannot support further speculation beyond this. While the differences in landowner characteristics indicate that land use shifts are more likely in urbanized counties, the future rate of farmland conversion (or premature idling) in urbanized counties will ultimately be determined by the interaction of many factors, chiefly cost/price relationships in commercial agriculture, the rate of population growth and new housing construction, and the intensity of public policy efforts to protect farmland from nonagricultural influences.

Table 17—Potential cropland: Tenure of owner and metropolitan status, United States¹

Tenure ²	Total	Metropolitan status				
		I	II	III	IV	V
<i>1,000 acres</i>						
Full-owner operator	36,041	1,358	2,261	2,543	110,023	19,856
Full-owner operator landlord	8,699	251	506	969	2,889	4,085
Part-owner operator	24,382	339	1,525	1,121	5,994	15,403
Part-owner operator landlord	2,938	27	83	102	1,092	1,635
Tenant owner operator	1,034	26	39	110	349	509
Nonoperator landlord	23,835	983	1,594	1,210	6,530	13,518
Nonoperator owner	14,502	1,184	2,012	1,103	3,759	6,444
No response ³	14,034	284	1,125	1,078	4,839	6,709
Total ⁴	125,464	4,452	9,145	8,235	35,473	68,159
<i>Percent of potential cropland</i>						
Full-owner operator	28.7	30.5	24.7	30.9	28.3	29.1
Full-owner operator landlord	6.9	5.6	5.5	11.8	8.1	6.0
Part-owner operator	19.4	7.6	16.7	13.6	16.9	22.6
Part-owner operator landlord	2.3	.6	.9	1.2	3.1	2.4
Tenant owner operator	.8	.6	.4	1.3	1.0	.8
Nonoperator landlord	19.0	22.1	17.4	14.7	18.4	19.8
Nonoperator owner	11.6	26.6	22.0	13.4	10.6	9.5
No response ³	11.2	6.4	12.3	13.1	13.6	9.8
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0

See table 16 for footnotes.

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